Pre-Tour Briefing Agenda

(1)	Overview of Presenters Transport & USGS/DWR Flow/WQ Network	Jon Burau (USGS) (20 min)
(2)	Overview of Lucas and Thompson (2012) and/or Lucas et al. (2006)	Lisa Lucas (USGS) (15 min)
(3)	Bivalve monitoring in the central Delta	Jan Thompson (USGS) (15 min)
(4)	Harmful algal blooms and nutrients in a complex system	Tamara Kraus (USGS) (20 min)
(5)	How the emergency drought barrier affected water quality and water age	
(6)	Hydrodynamic Modeling at Franks Tract	Eli Ateljevich (DWR) (15 min)
(7)	Where are we going?	Jon Burau (USGS) (2 min)

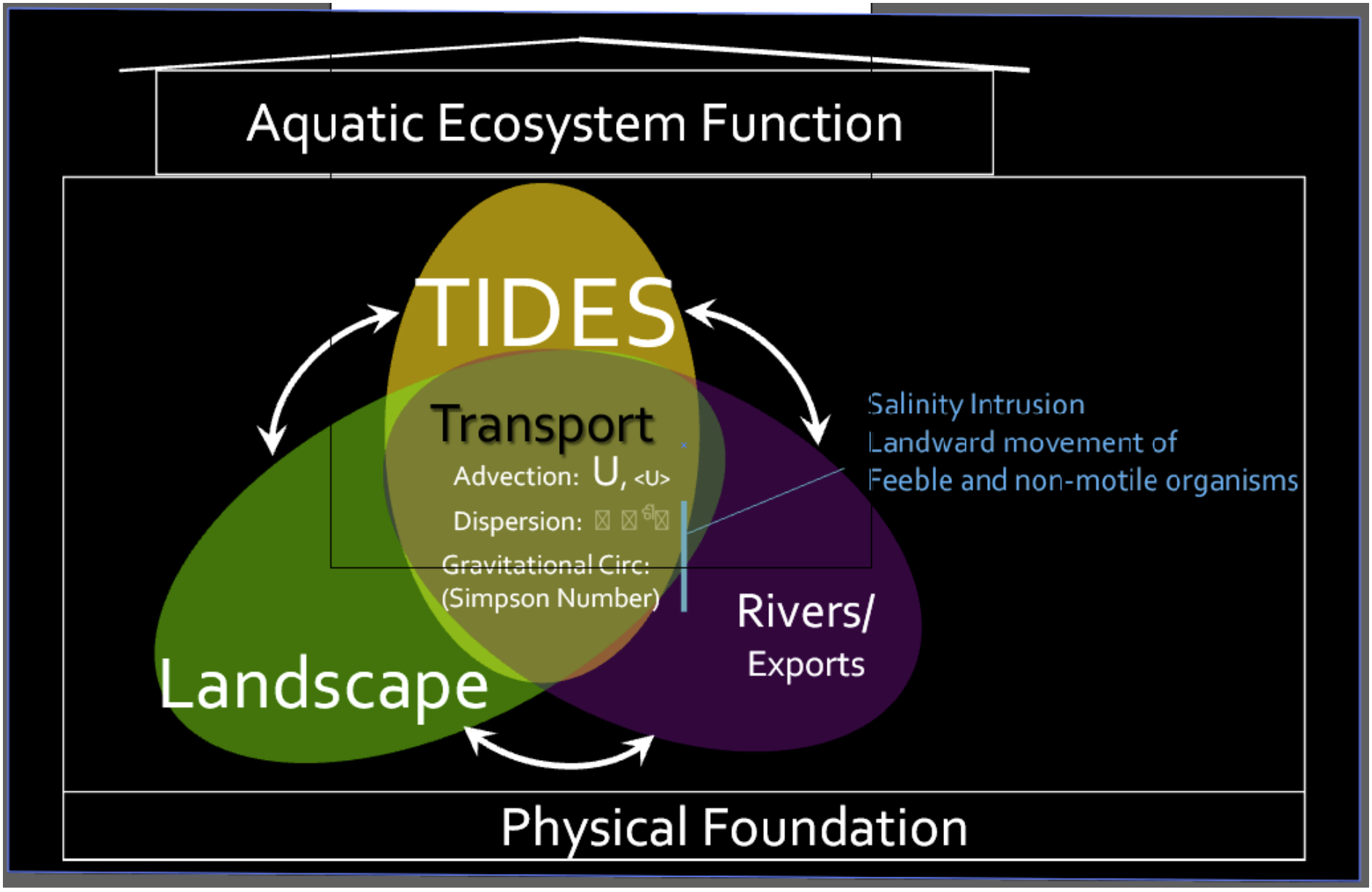
Transport in Central Delta

(How stuff moves around)

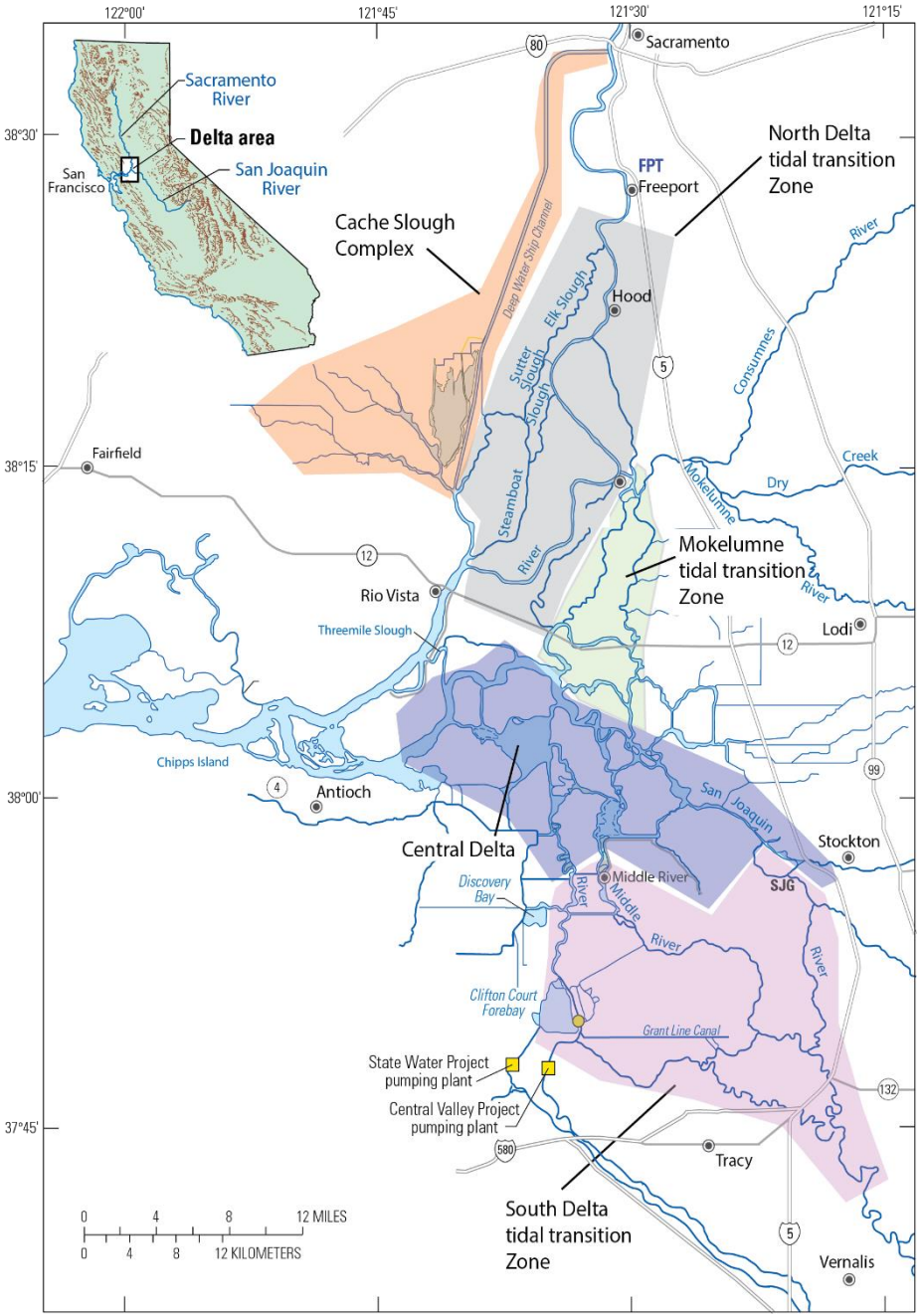
and

USGS/DWR Flow Station Network

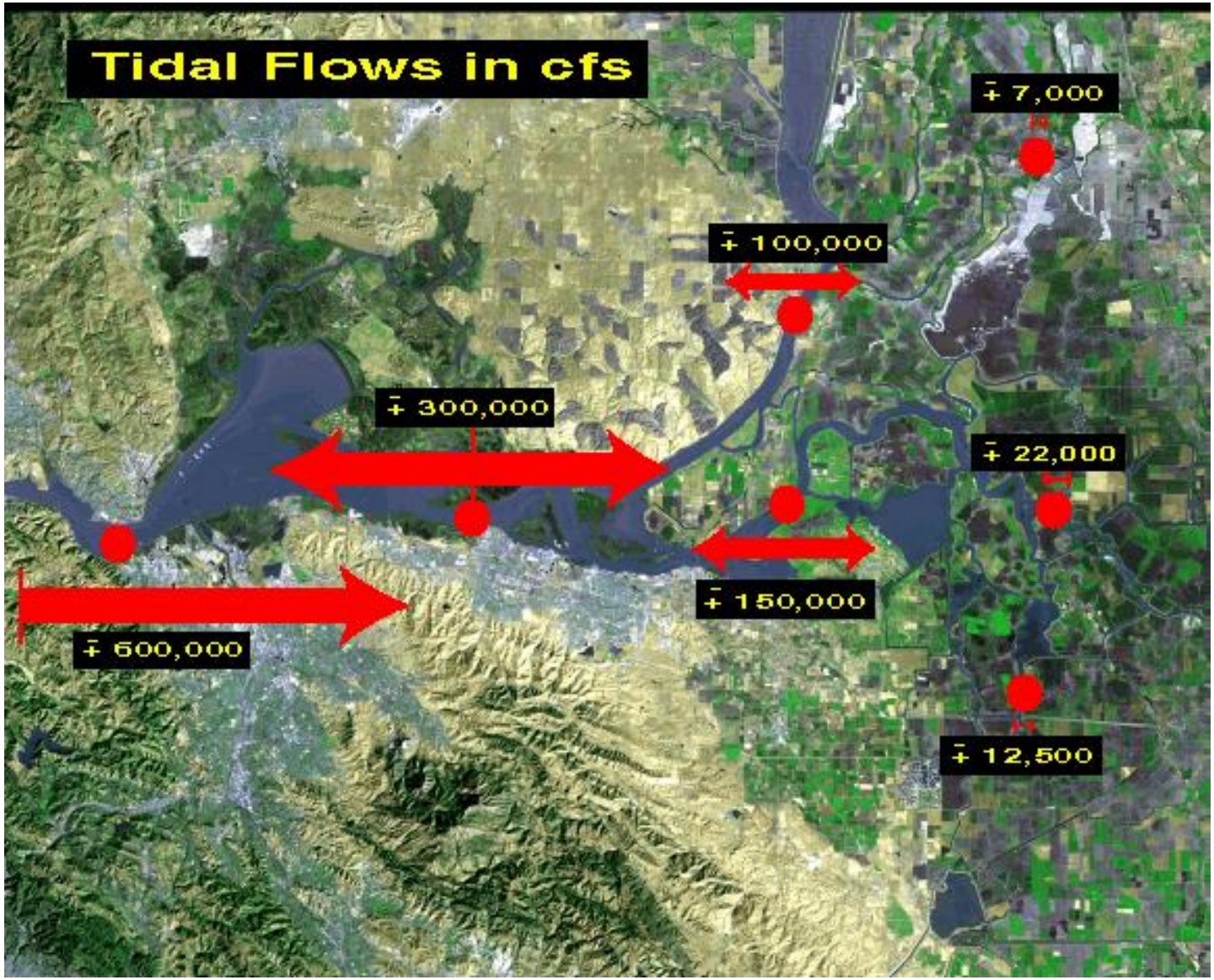
(How we measure how stuff moves around)


Aquatic Ecosystem Function
TIDES
Transport
Advection: U, <U>
Dispersion:
Gravitational Circ:
(Simpson Number)
Salinity Intrusion
Landward movement of
Feeble and non-motile organisms
Rivers/
Exports
Landscape
Physical Foundation

Map of Hydrodynamic Transport Regions



Delta hydrodynamics are dominated by the tides



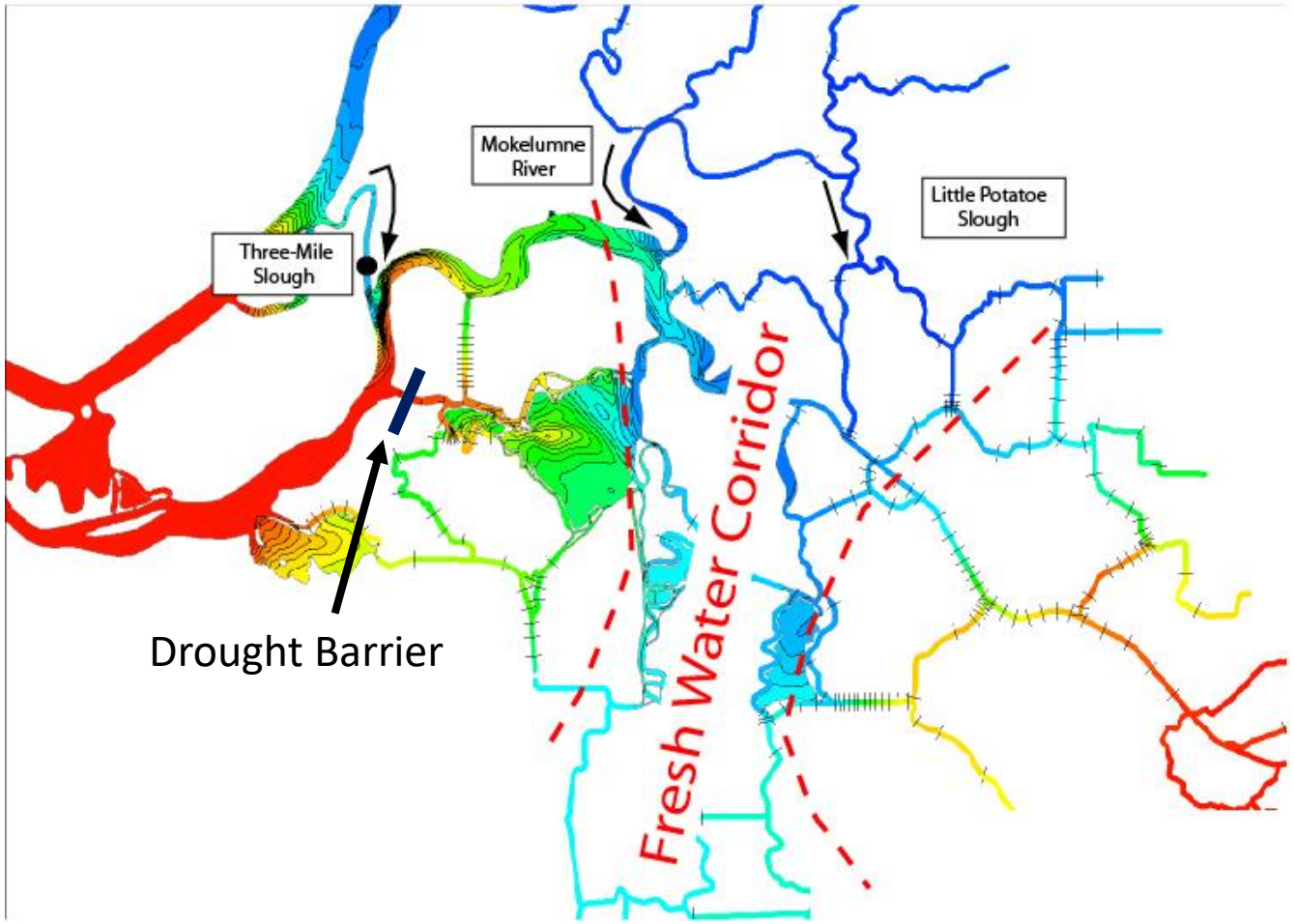
Tidal Excursions are long

Two examples of Transport in the Delta:

(1) **Salinity** (water supply, Ag)

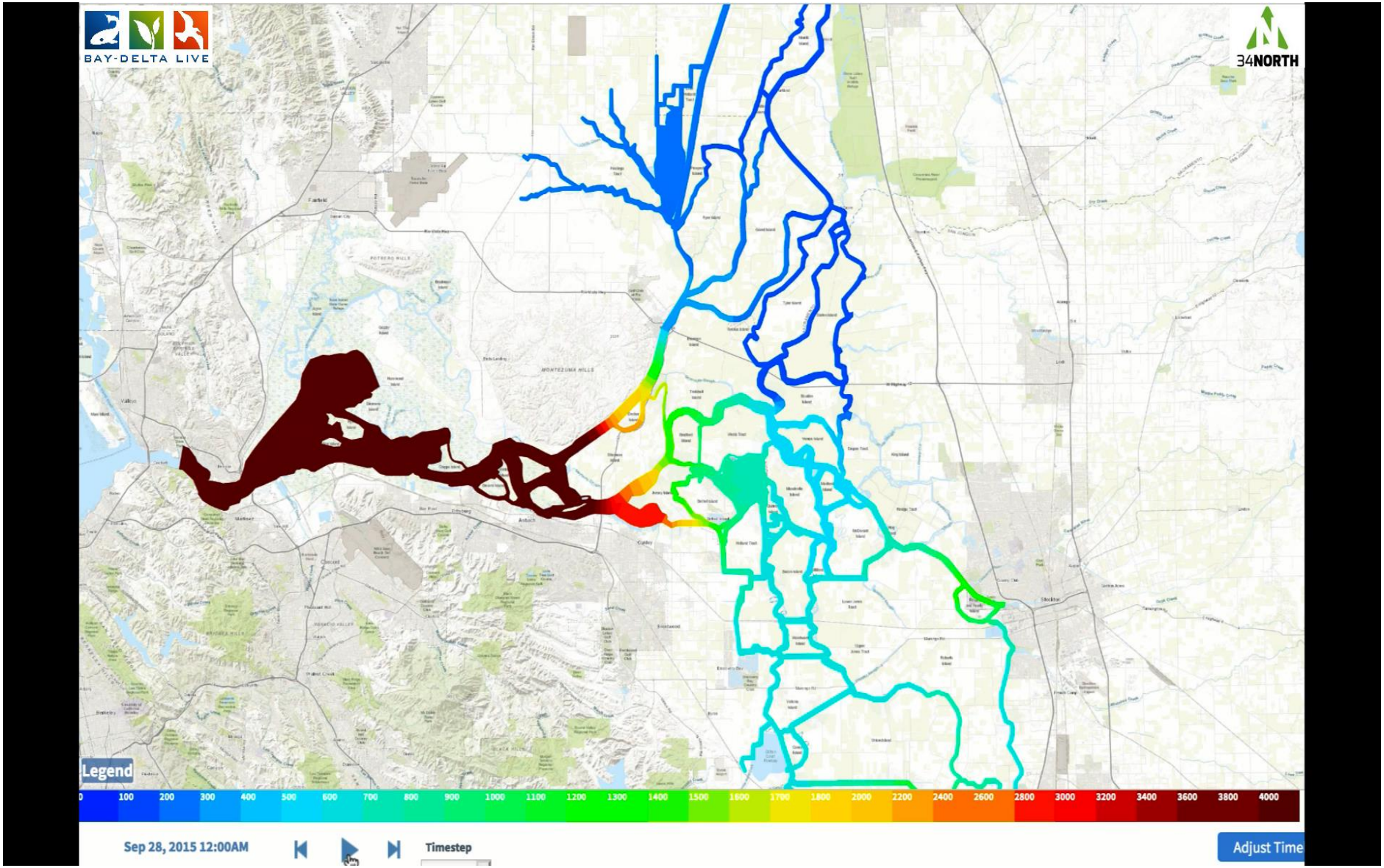
(2) **Turbidity** (primary production, delta smelt, etc.)

Salt Transport in the Delta



Salt Field (Sept–Oct, 2015: Drought Barrier out)

Constant point in **Time**



Transport of Constituents occurs in two ways

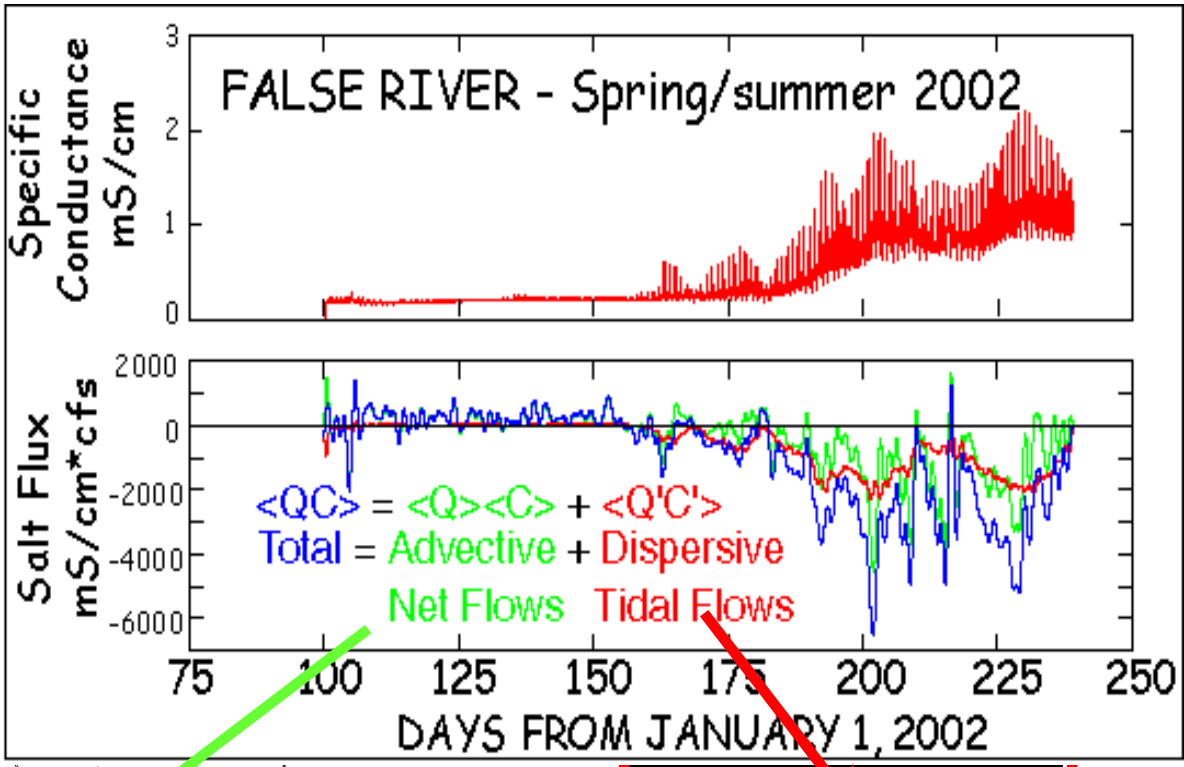
(1) Net flows (Rivers, exports)

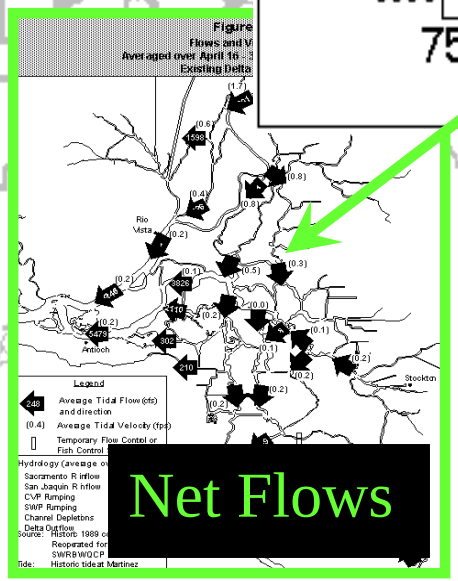
(2)Tidal Dispersion (tides interacting with landscape

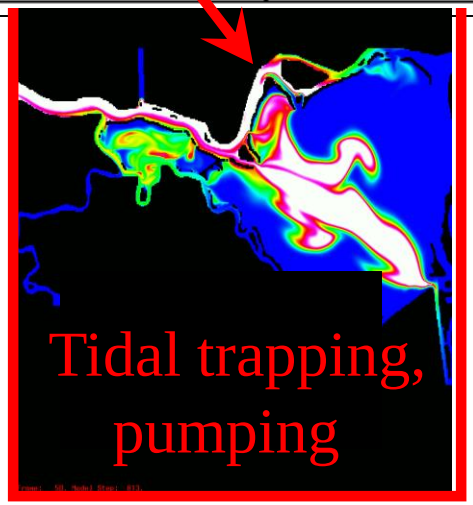
Tool: Constituent Flux Decompositions

False River Salt Flux example

Site location







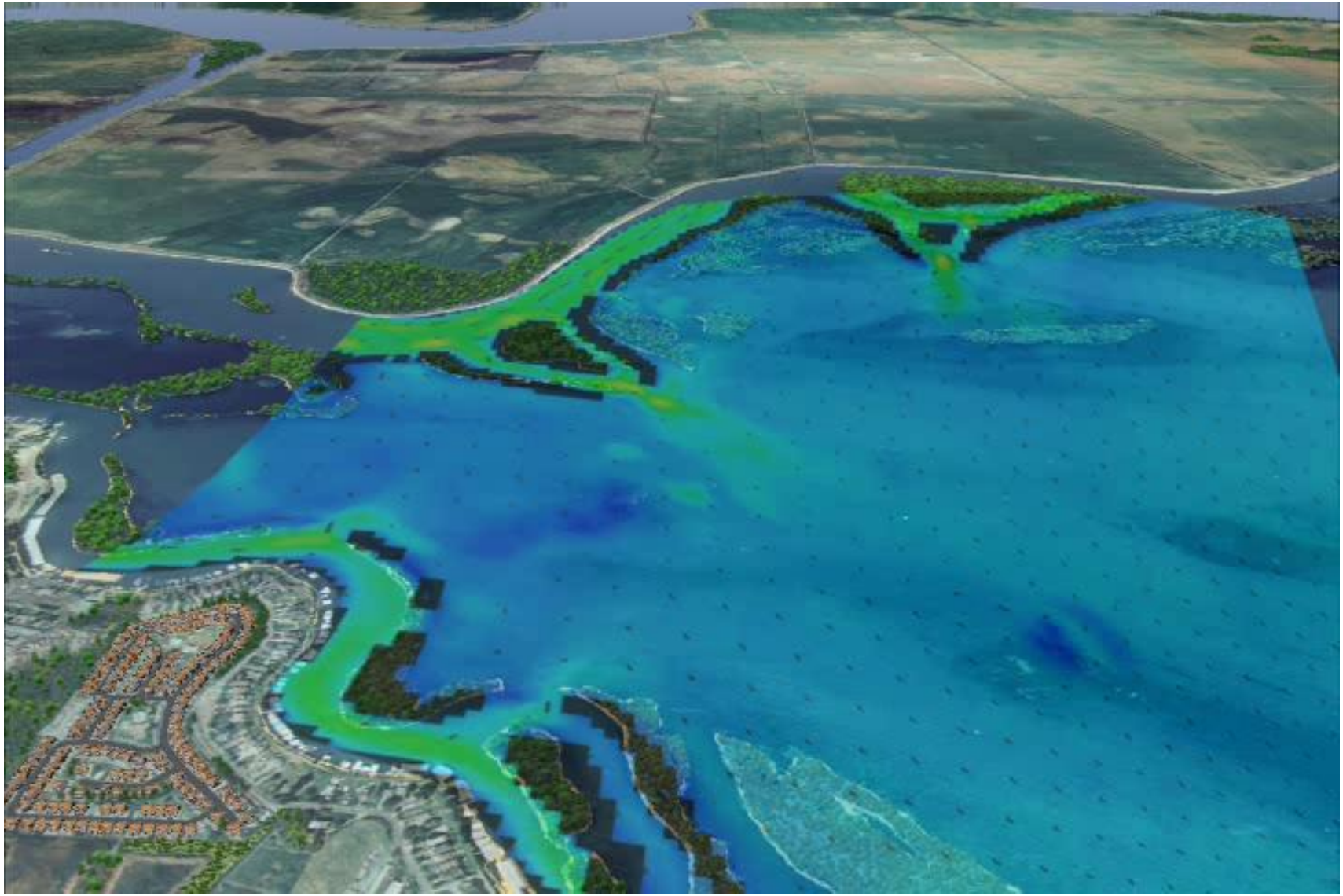
Numerous Breaches

SOE 2003

Numerical Dye Release

SOE 2003

Velocity Distribution: Jets



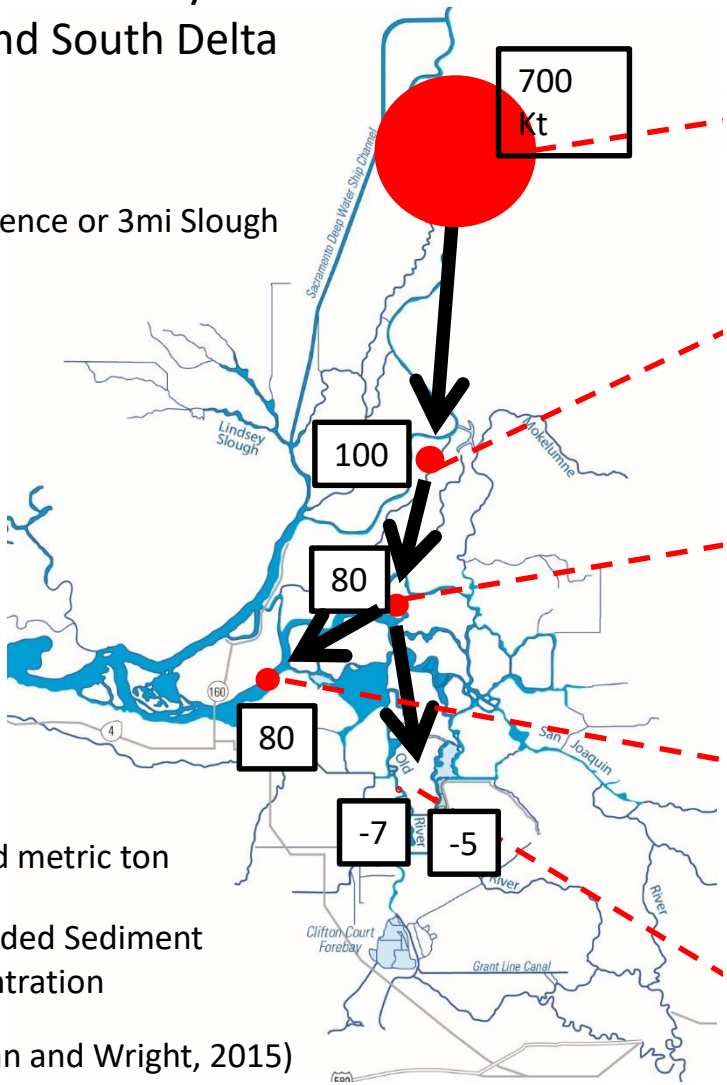
SOE 2003

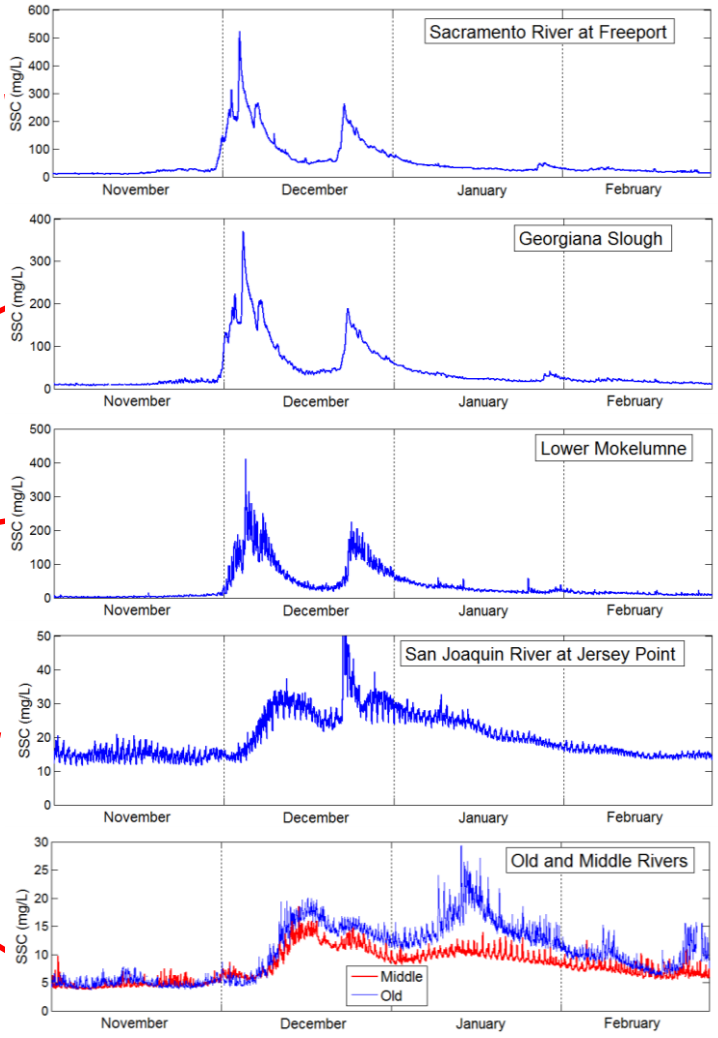
Suspended Solids (turbidity) Transport

Georgiana Slough is the main source of turbidity
in the Central and South Delta

Georgiana Slough is the main source of turbidity in the Central and South Delta

Not the Confluence or 3mi Slough





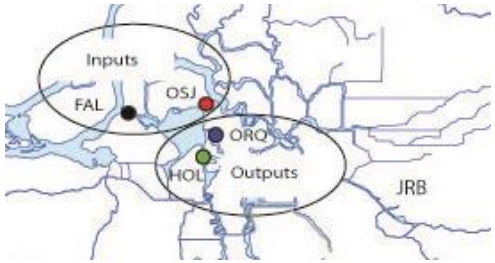
Kt = thousand metric ton

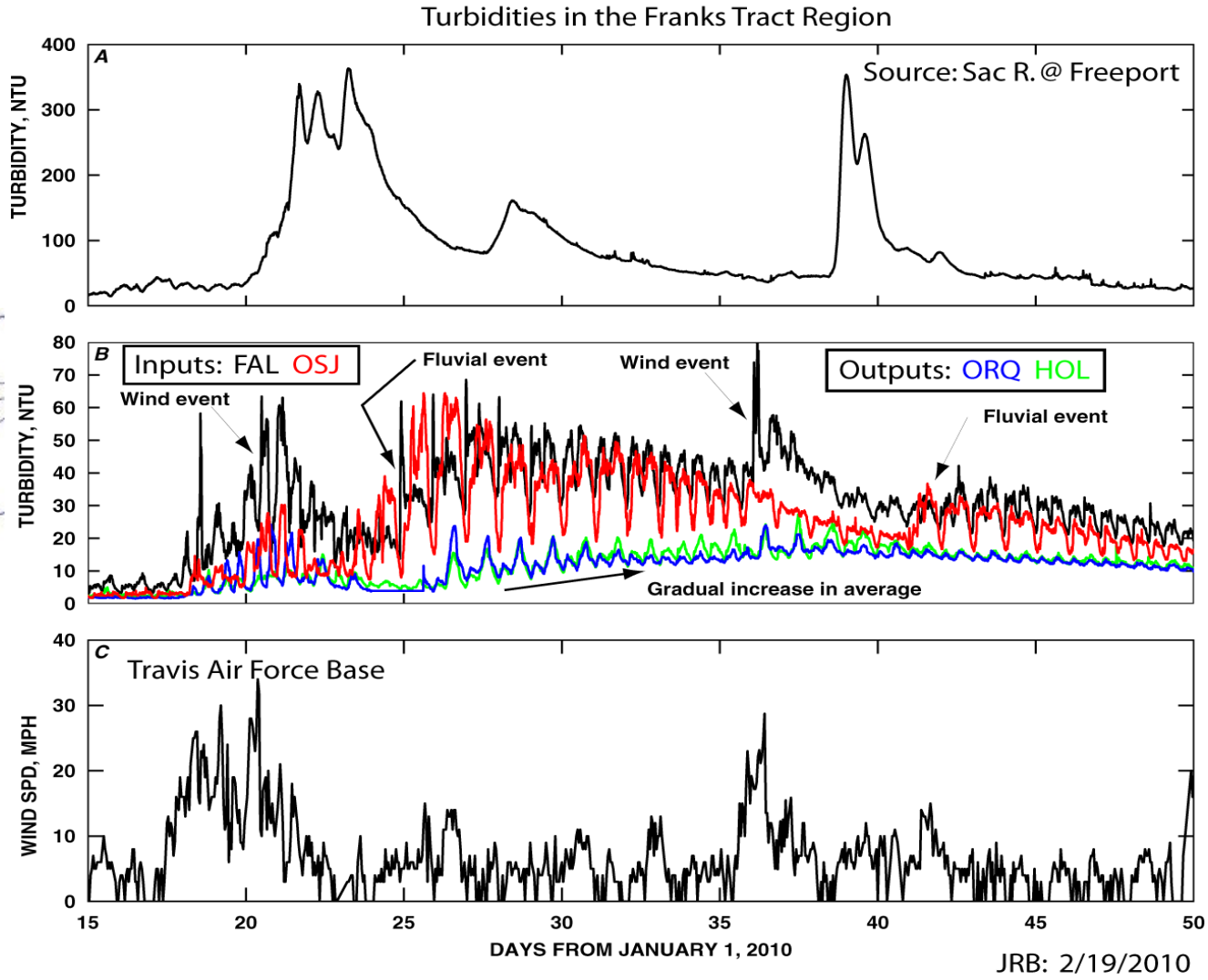
SSC = Suspended Sediment Concentration

(After Morgan and Wright, 2015)

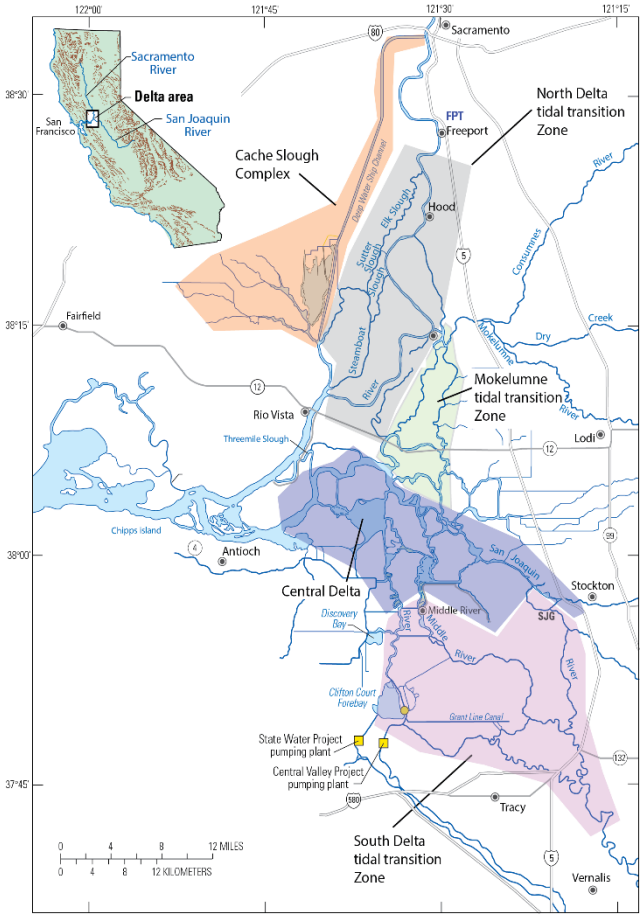
Flooded Islands act like settling basins

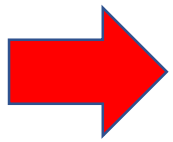
Turbidities drop dramatically across Franks Tract

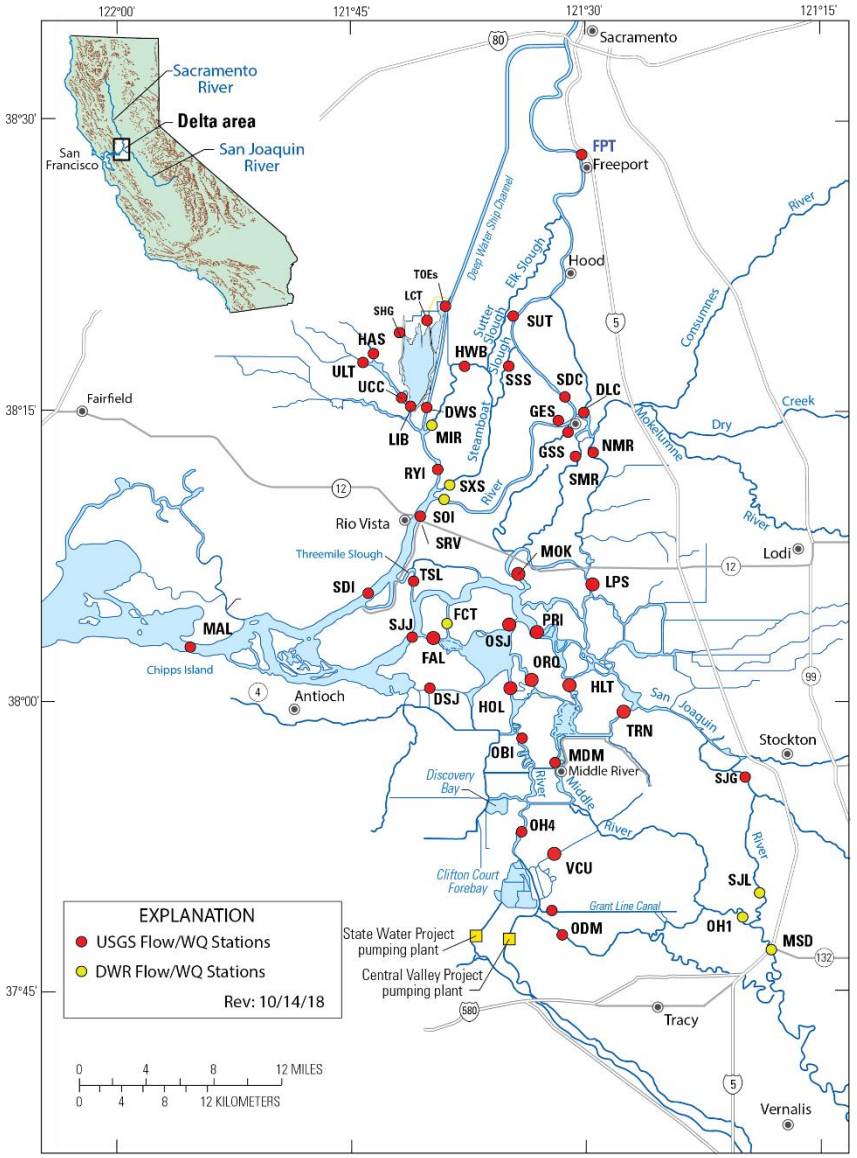




USGS/DWR flow/WQ network







USGS Flow/WQ Station Network Salient Features (I)

- Regional Scale
- Designed to measure fluxes between regions
- WQ is paired with flow to compute fluxes
- Many of stations located within a tidal excursion

USGS Flow/WQ Station Network

Salient Features (II)

- Acoustic Telemetry data will be collected at flow stations (physical covariates collected with biological data)
- Should collect all fisheries data at flow stations (Wireless data dump)

Constituent Tracker

A **Web App** that generates Delta-Scale Water Quality Fields based on time series data

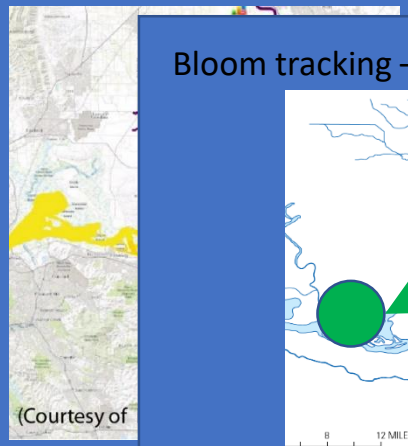
This tool aggregates (leverages) all of the fixed-site Water Quality time-series data collected in the Delta

Examples of management challenges the Constituent Tracker can address

Salinity Intrusion

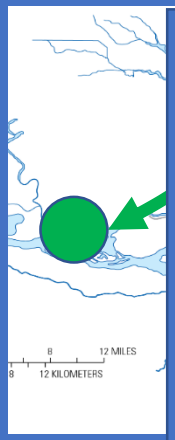
(Courtesy o

Turbidity Transport

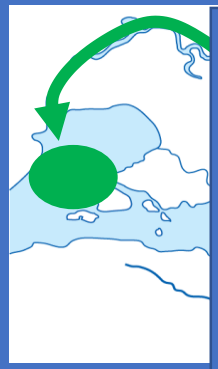


(Courtesy of

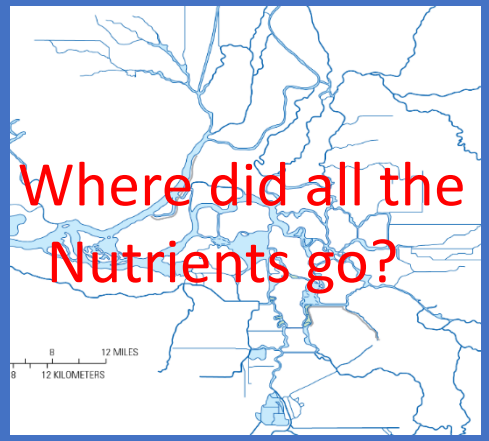
Bloom tracking – North Delta Flow Action



Transport of Constituents from SMSCG operations

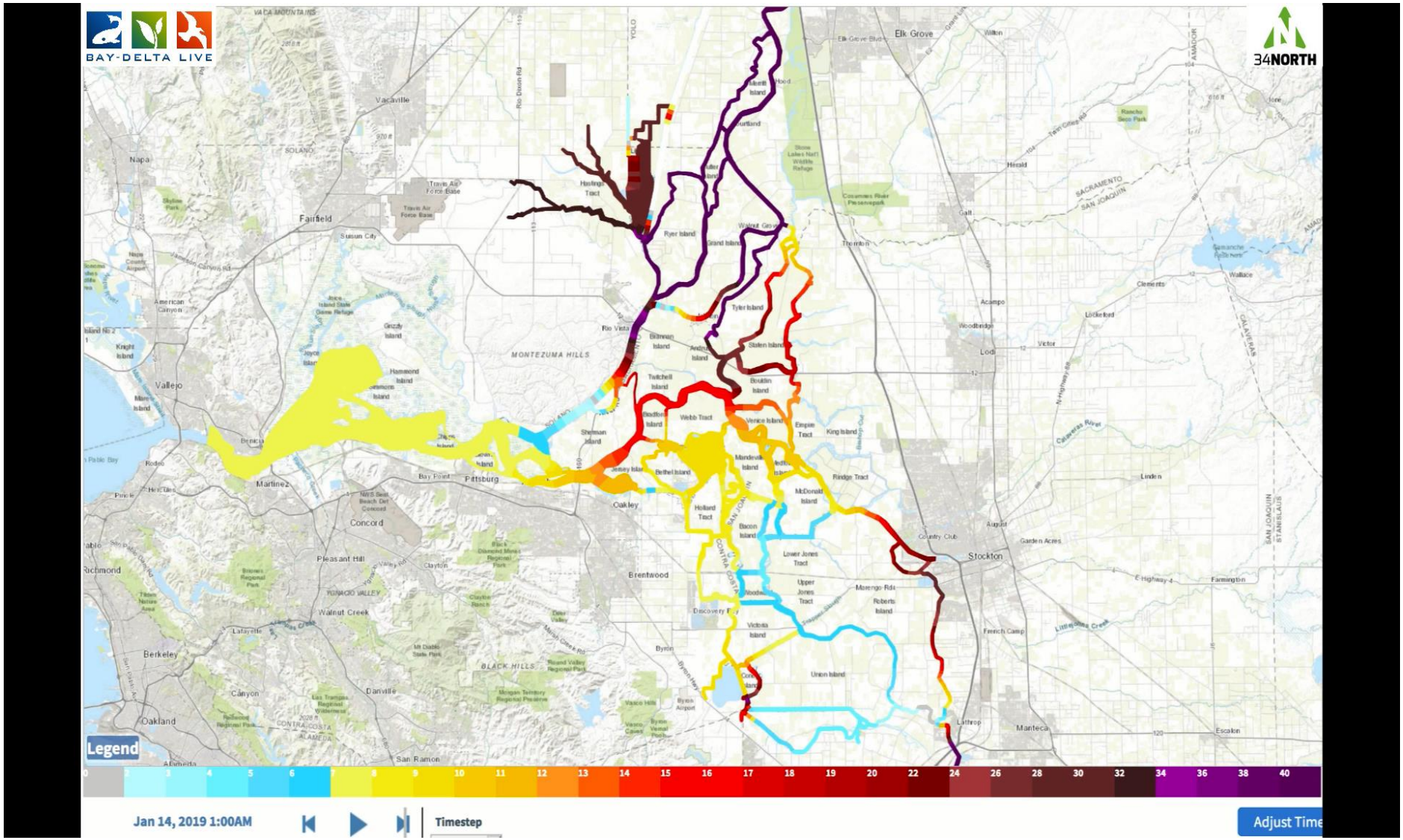


Base Line Study



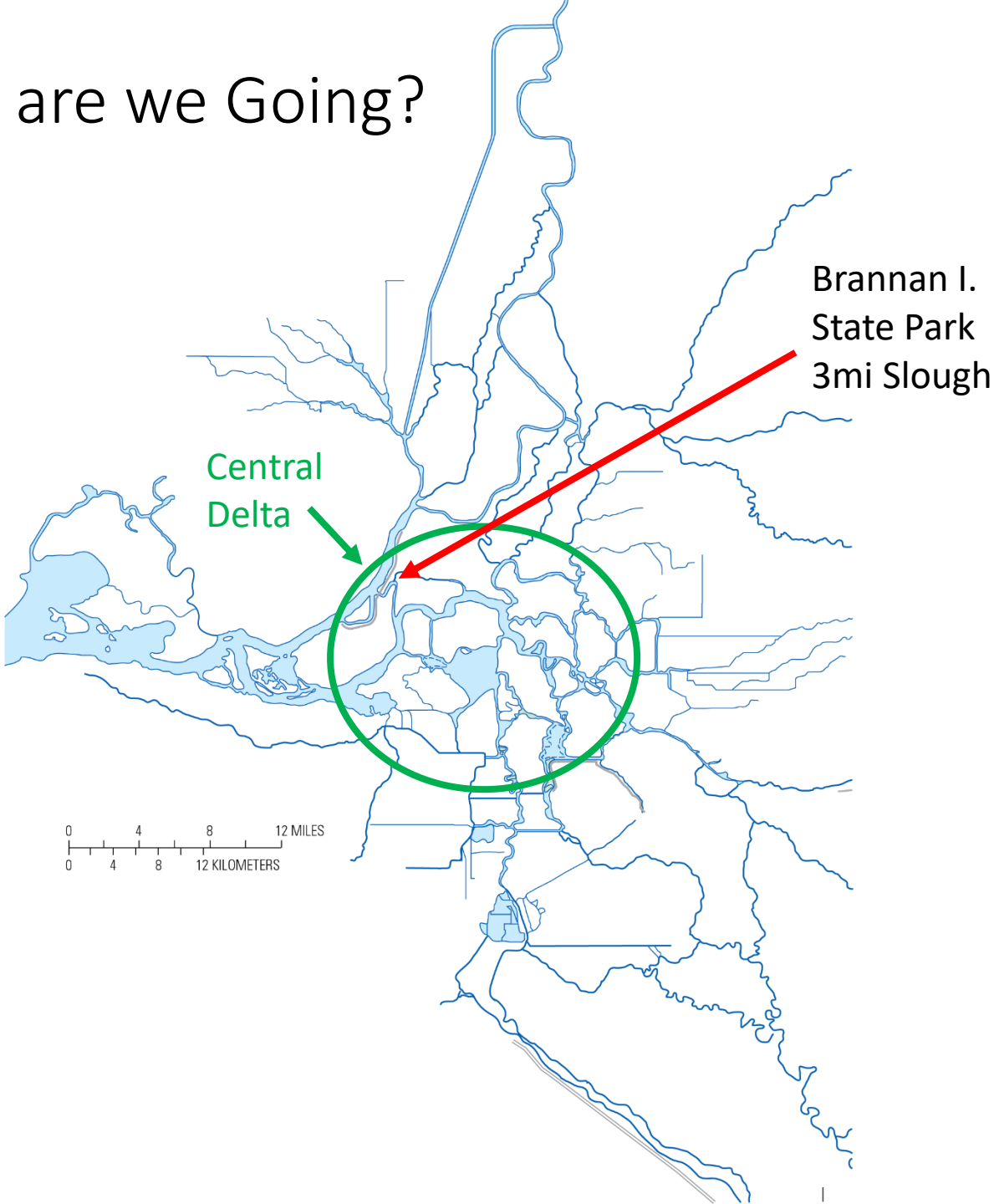
Turbidity Field First Flush (Jan 14-27, 2019)

Constant point in **Tide**



Questions?

Where are we Going?



Where are we Going?